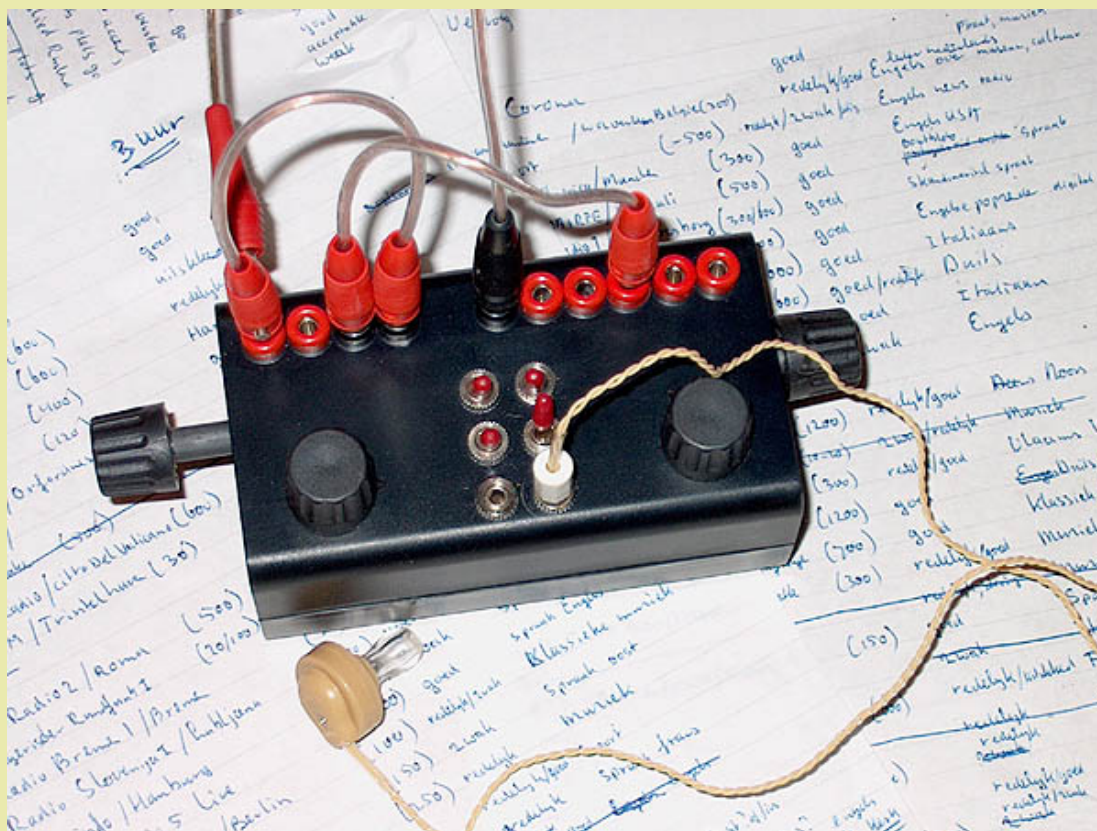


# IMPROVED CRYSTAL RECEIVER FOR THE MEDIUM WAVE (AND SHORTWAVE)

(2003)



*The improved crystal receiver.*

## WHAT YOU CAN HEAR WITH SUCH A SIMPLE CRYSTAL RECEIVER

All stations are heard **without using any amplifier!**

**Just the passive diode detector and crystal telephone are used with a 20 meter long wire antenna at a height of 4 to 5 m!**

Total listening time during 2 days was only 3 to 4 hours!

Frequency	Station	Power	Quality	Remarks
621	RTBF-Belgium (Waver-Overysel)	300	acceptable	031129 French
648	BBC Worldservice (Orfordness)	500	good	031128 English
675	Arrow Radio The Netherlands (Lopik)	120	good	031128 Dutch + Music
693	BBC Radio 5 Live	150	acceptable	031128 English
747	Radio 1 The Netherlands (Zeewolde)	400	strong	031128
765	Radio Suisse Romande (Sottens)	600	strong	031129 Music + French

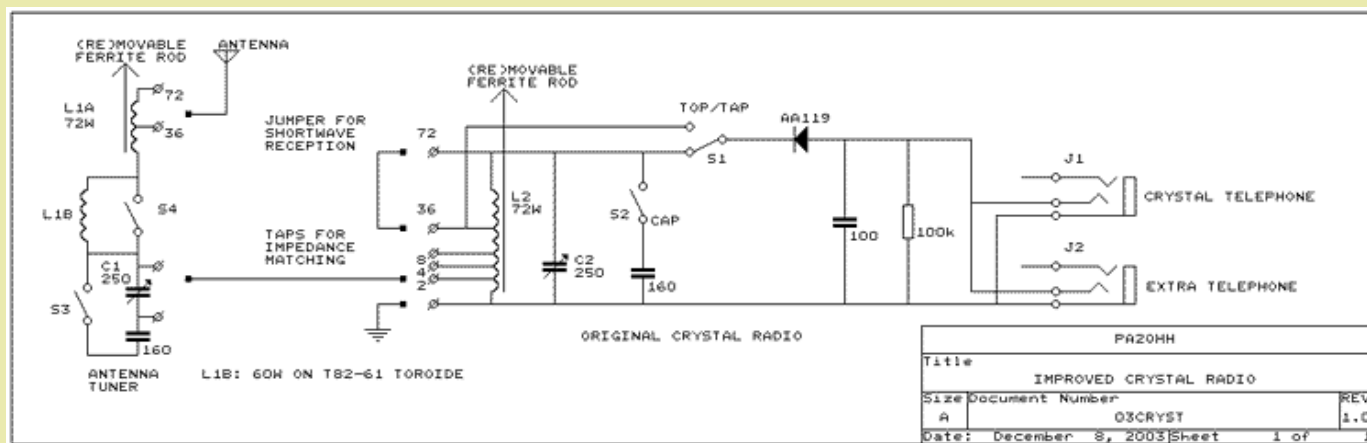
801	Bayerischer Rundfunk 1	100	acceptable	031128 Deutsch + Music
846	RAI Radio 2 (Roma)	500	acceptable	031128 Italian
864	France Bleu (Villebon sur Yvette)	300	good	031129 Music + French
873	AFN Power Network (near Frankfurt)	150	good	031129 Sport USA
900	RAI Radio 1 (Milano)	600	good	031128 Italian
909	BBC Radio 5 Live	-200	good	031128 English about sport
918	Radio Slovenija 1 (Ljubljana)	300	good	031128 East European
927	RAI Radio 1 (Milano)	600	good	031128 Italian
927	VRT Radio 1 Belgium (Wolvertem)	300	good	031129 Vlaams about football
936	Radio Bremen (Bremen)	50	weak	031128 Music
945	France Info (Toulouse)	300	acceptable	031128 French
954	CZE Cesky Rozhlas	300	good	031129
963	Radio Finland (Pori)	600	acceptable	031129
972	NDR info (Hamburg)	100	weak	031128 Deutsch
981	Radio Varna?? Bulgary (Varna)	150	weak	031128
990	Deutschland Berlin (Berlin)	100	acceptable	031128 Classic music
1053	Talksport UK	-500	acceptable	031128 Sport
1062	DRP3 Denmark (Kalundborg)	250	acceptable	031128 English
1089	Talksport UK	400	good	031128 English about sport
1134	Voice of Croatia (Zadar)	600	strong	031128
1143	Voice of Russia (Bolshakovo)	150	acceptable	031128
1179	Sveriges Radio 1 (Solvesborg)	-600	good	031128 Swedish?
1188	VOA / RFE Hungary (Marcali)	500	good	031128
1197	Voice of America (Munchen)	300	good	031128 English
1215	Virgin Radio UK	-200	good	031128 English + Music

1296	BBC Worldservice (Orfordness)	500	strong	031128
1314	NRK1 Norway (Kvitsoy)	1200	good	031129 Norwegian language?
1332	RAI Radio 1 Italy	300	acceptable	031128 Italian
1386	KAL Voice of Russia (Bolshakovo)	1200	good	031129 German
1395	Radio 10 FM The Netherlands (Trintelhaven)	30	good	031128 Dutch + Music
1395	Radio Tirana (Fllake)	500	strong	031128
1422	Deutschland Funk (Heusweiler)	600	good	031128 Deutsch
1440	RTL Radio (Marnach)	-1200	acceptable	031128 Deutsch
1467	Transworld + Vatican (Roumoules)	1000	good	031128 Music, various languages
1494	Voice of Russia (St. Petersburg)	600	acceptable	031128
1512	Vlaanderen Belgium (Wolverthem)	300	good	031128 English, Dutch
1530	Vatican Radio (Citta d. Vaticano)	600	good	031128 Italian
1539	Evangeliums Rundfunk (Mainflingen)	700	good	031129 Classic music (opera)
1630	Radio Corona The Netherlands	?	good	031128 Local Pirate station

## What is the trick

That is an extra antenna tuner to improve the selectivity and sensitivity!

And there is the fading! Stations vary considerably in strength due to fading. Sometimes they are quite strong for a few minutes, then they disappear and other stations can suddenly be heard. So be patient, keep listening, tune the antenna tuner to maximum sensitivity or selectivity and let the fading do its work.



*Diagram of the improved crystal receiver with antenna tuner.*

big diagram

*Top view*

### Description

This passive receiver is a combination of an antenna tuner with an original crystal receiver. The antenna tuner improves the sensitivity and selectivity considerably as it tunes the antenna to resonance for the reception frequency. It also suppresses breakthrough of shortwave stations.

The tuner and receiver coils are wound on 8mm ferrite rods (0.3 mm copper wire). The rods are provided with a knob and movable, so the value of L1 and L2 can be varied by moving the rods in and out the coils. For shortwave reception they are removed completely.

With L1B (switch S4), the inductance can be increased for the lower end of the medium wave band, the capacitors C1 and C2 can be increased with an extra 160 pF with S3 and S2. With S1, the diode can be connected to a tap instead of the top of L2. Below 1 MHz, the top position was the best one, the tap did only decrease the sensitivity without affecting the selectivity. Above 1 MHz, the tap gave the best selectivity without losing sensitivity.

S2 is added to cover the frequency range below 750 kHz as the value of the variable capacitor was too low or the number of windings of L2 should have been a little more... Connect the tuner part with a jumper wire to that tap of L2 that gives the best selectivity or best sensitivity.

*Inside view*

### How to use the antenna tuner

The antenna tuner tunes the antenna to resonance. Impedance matching is done by choosing the optimum tap of L2.

With jumpers, the tuner can be used in 3 ways:

1. L1 and C1 in series. This is the preferred method with maximum selectivity. Tuning is done by C1 and L1A. Selectivity is maximal if L1B is switched in series with L1A.
2. L1 only, for the lower frequency range if it is not possible to tune the antenna with method 2. Tuning is done by moving the ferrite rod in and out L1A.
3. L1 and C1 in parallel, for the lower frequencies and short antennas (see first picture). Tuning is done by C1. However, use of this method should be avoided, take one of the next two if possible.

However, it depends on the antenna etc. which combination is the best. And of course you need a (good) ground system! I use the central heating for that.



*Hanging up the antenna is a real outdoors activity!*

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